

The strategy of continuing to exploit the brownfields is good for the EROI and provides the capacity to develop its activities.

This is the very heart of modern economic and energy rationality. Prematurely abandoning a deposit because its initial production level has declined, without carrying out a complete assessment of its hidden reserves, is a major strategic error.

By weighing the colossal costs of implementing a new operating structure (Greenfield) against the optimization of an existing asset (Brownfield), the EROI (Energy Return on Investment) tips the balance dramatically in favor of technological re-exploration.

1. The impact of surface CAPEX on EROI

EROI measures the efficiency of a project: how much energy (and capital) do you need to invest to extract a given amount of energy?

In the case of a new operating structure (Greenfield), the EROI collapses from the outset due to the heavy initial investments:

- Construction of access roads and living quarters.
- Laying hundreds of kilometers of export pipelines to hubs or ports.
- Installation of drilling platforms, separation stations and surface storage.
- All this "embodied energy expenditure" to install the surface infrastructure weighs heavily on the overall EROI of the project. The extracted barrel of oil must first repay this immense energy debt before becoming truly profitable.
- The costs of obtaining the exploration permit and drilling, as well as the waiting time (5 to 7 years), should not be overlooked.

2. The Brownfield + RSS-NMR model: An EROI boosted by existing resources

Conversely, performing a complete assessment of a mature block using the RSS-NMR technology complex makes it possible to bypass this financial and energy barrier:

- **Proven financial and time efficiency:** Deploying an RSS-NMR campaign reduces exploration costs by a factor of 10 to 15 and allows you to complete analyses in 4 to 5 months instead of several years. This means that with minimal investment, you know exactly where your resources are.



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- **Zero surface infrastructure burden:** As the export network (pipelines, manifolds, port connections) is already in place, operational and administratively covered from the start, each barrel of oil bypassed or each new forgotten reservoir discovered by the technology requires minimal implementation effort.
- **High-yield sidetrack drilling :** Instead of drilling a full well from the surface with a new structure, it is often sufficient to perform a sidetrack drilling operation (track) or replenishment from an existing well. Capital and energy expenditure is minimal for direct access to the mobile fluid.

3. "Smart Money": Funding scientific certainty

Historical data shows that traditional exploration has a low geometric success rate, ranging from 25% to 45%, which destroys the EROI in the case of dry wells. By switching to a direct fluid signature detection approach using NMR spectroscopy, the accuracy rate jumps to 70-75%, validated by real-world industrial applications.

[New Operating Structure] — ► High Risk (25-45 %) + Colossal CAPEX — ► Low EROI

[RSS-NMR Evaluation on Existing System] — ► Certainty (70-75%) + Infrastructure — ► Excellent EROI

In conclusion

Maintaining and fully reassessing an existing oil field is not a fallback option; it's the most defensible strategy when facing an investment committee or partners. By demonstrating that an RSS-NMR scan eliminates the blind spots of old seismic data at a negligible cost, and that no major pipelines need to be built, you mathematically prove that your project's EROI will be significantly higher than that of any risky new exploration permit. You're capitalizing on past performance to maximize present profits.